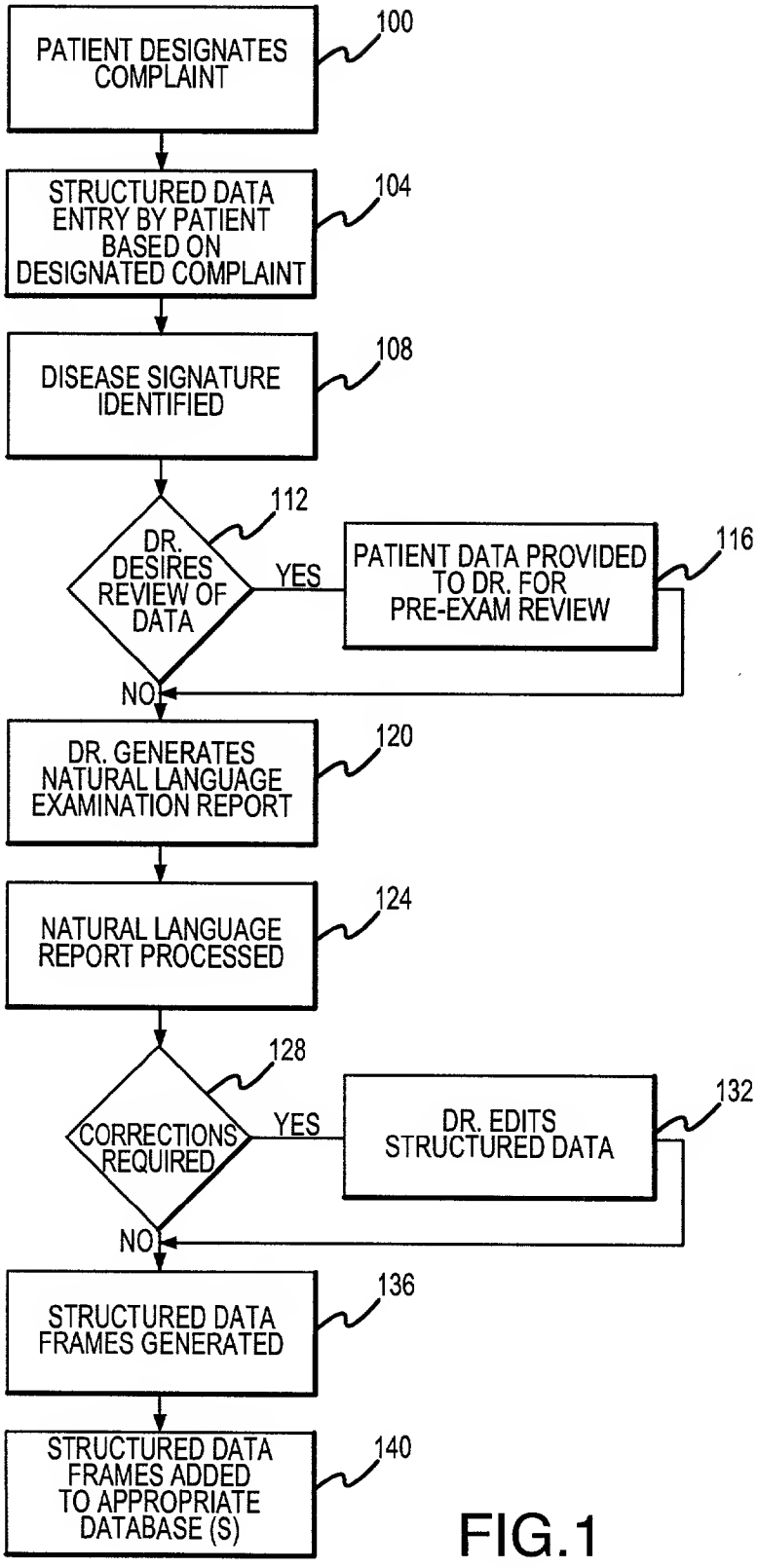

FIG.1

PATIENT ID: _____ AGE: ____ SEX: ____ PROCEDURE ID: _____ DATE: _____

PATIENT INFORMATION

NAME	
ADDRESS	
HOME PHONE	
WORK PHONE	
E-MAIL	

GENDER ☐ MALE ☐ FEMALE

BIRTH DATE MONTH | DAY | YEAR

RACE/ETHNICITY
☐ WHITE/CAUCASIAN ☐ AFRICAN AMERICAN ☐ HISPANIC/LATINO
☐ ASIAN/PACIFIC ISLANDER ☐ NATIVE AMERICAN ☐ MULTIRACIAL
☐ OTHER

MARITAL STATUS
☐ SINGLE ☐ LIVING WITH ANOTHER ☐ MARRIED
☐ SEPARATED ☐ DIVORCED ☐ WIDOWED

EDUCATION LEVEL
☐ HIGH SCHOOL OR LESS ☐ VOCATIONAL/TECHNICAL ☐ COLLEGE DEGREE
☐ GRADUATE DEGREE ☐ PROFESSIONAL DEGREE

OCCUPATIONAL STATUS
☐ EMPLOYED ☐ STUDENT ☐ RETIRED
☐ UNEMPLOYED

INSURANCE/BILLING 1. 2.

FIG.2

COPY OF PAPERS ORIGINALLY FILED

PATIENT ID:_____ AGE:____ SEX: ____ PROCEDURE ID: _____DATE: _____

REASON FOR VISIT ☐ROUTINE (E.G., CHECKUP) ☐1ST VISIT TO THIS PHYSICIAN, OR NEW MEDICAL CONDITION ☐FOLLOW-UP FOR EXISTING MEDICAL CONDITION

REFERRED BY: ☐PRIMARY CARE PHYSICIAN ☐ANOTHER SPECIALIST ☐SELF

REFERRING DIAGNOSIS

ICD - 9 CODES	1.	2.	3.

PHENOMENON CATEGORY ☐LUMP/BUMP ☐WRONG DIRECTION ☐DISCHARGE/LEAK ☐DISCOLORATION ☐BLEEDING ☐INTAKE DIFFICULTY

OTHER PHENOMENON CATEGORY

IF YOU ARE EXPERIENCING A NEW MEDICAL PROBLEM, SYMPTOM, OR CONDITION, PLEASE FILL OUT THE FOLLOWING:

CHIEF COMPLAINT

SYMPTOM DURATION

SYMPTOM QUANTITY (DISEASE-SPECIFIC)

SYMPTOM TIMING (DISEASE-SPECIFIC)

SYMPTOM CONTEXT

SYMPTOM QUALITY

RELEVANT PAST HX

PREVIOUS CONSULT WITH ANOTHER PHYSICIAN	☐YES	☐NO
RECEIVED MEDICAL TREATMENT FOR THIS CONDITION	☐YES	☐NO
PREVIOUS SURGERY FOR THIS CONDITION	☐YES	☐NO

OTHER

RELEVANT FAMILY HX (DISEASE-SPECIFIC)

IF THIS IS A FOLLOW-UP VISIT, PLEASE ANSWER THE FOLLOWING:

SYMPTOM EVOLUTION (PER SYMPTOM) ☐GONE AWAY COMPLETELY ☐IMPROVED ☐NO CHANGE ☐WORSE

FIG.3

PATIENT ID:_____ AGE:____ SEX: ____ PROCEDURE ID: _____DATE: _____

ARE YOU EXPERIENCING ANY OF THE FOLLOWING PROBLEMS?	☐WEIGHT LOSS ☐WEIGHT GAIN	☐FEVER	☐FATIGUE	CONSTITUTIONAL
DO YOU HAVE LAZY EYE?	☐YES	☐NO		EYE PROBLEMS
ANY NEW VISION/EYE PROBLEMS?	☐YES	☐NO		
IF YES, PLEASE CHECK...	☐BLURRED VISION ☐EYE PAIN	☐DOUBLE VISION ☐EYE REDNESS	☐LOSS OF VISION ☐EYE DRYNESS	
ARE YOU HAVING HEARING, BALANCE, SPEECH OR THROAT PROBLEMS?	☐YES	☐NO		EAR/NOSE/THROAT
IF YES, PLEASE CHECK...	☐TROUBLE HEARING ☐LOSS OF BALANCE ☐HOARSENESS	☐RINGING IN EAR(S) ☐EAR PAIN ☐TROUBLE SWALLOWING	☐DIZZINESS ☐EAR DISCHARGE ☐SLURRED SPEECH	
HAVE YOU BEEN TOLD YOU HAVE A HEART MURMUR?	☐YES	☐NO		CARDIOVASCULAR
ARE YOU EXPERIENCING ANY CHEST PAIN, HEART PROBLEMS, LIMB PAIN, OR FAINTING?	☐YES	☐NO		
IF YES, PLEASE CHECK...	☐CHEST PAIN ☐FAINTING	☐LIMB SWELLING ☐LIMB PAIN ON WALKING	☐FAST HEART BEAT ☐IRREGULAR HEART BEAT	
DO YOU HAVE ASTHMA?	☐YES	☐NO		RESPIRATORY
ARE YOU HAVING PROBLEMS BREATHING, COUGHING, OR COUGHING UP ANYTHING?	☐YES	☐NO		
IF YES, PLEASE CHECK...	☐TROUBLE BREATHING	☐CHRONIC COUGH	☐COUGHING BLOOD	
ARE YOU HAVING ANY STOMACH OR DIGESTIVE PROBLEMS?	☐YES	☐NO		GASTROINTESTINAL
IF YES, PLEASE CHECK...	☐INDIGESTION ☐NAUSEA ☐DIARRHEA	☐HEART BURN ☐VOMITING ☐CONSTIPATION	☐ABDOMINAL PAIN ☐REGURGITATION ☐BLOODY STOOLS	

FIG.4

ARE YOU HAVING ANY PROBLEMS URINATING?	☐YES	☐NO		GENITOURINARY
IF YES, PLEASE CHECK...	☐INCONTINENCE ☐EXCESSIVE URINATION	☐PAIN ON URINATION	☐BLOOD IN URINE	
ARE YOU HAVING MUSCLE OR JOINT PROBLEMS OR PAIN ANYWHERE?	☐YES	☐NO		MUSCULOSKELETAL
IF YES, PLEASE CHECK...	☐JOINT SWELLING ☐JOINT PAIN ☐JOINT STIFFNESS	☐MUSCLE PAIN ☐MUSCLE CRAMP ☐MUSCLE TWITCHES	☐BACK PAIN ☐NECK PAIN ☐LOSS OF MUSCLE	
ARE THERE ANY CHANGES TO YOUR SKIN, HAIR, SENSE OF FEEL, OR SWEATING?	☐YES	☐NO		SKIN & BREAST
IF YES, PLEASE CHECK...	☐NUMBNESS ☐HAIR LOSS ☐SKIN RASH	☐TINGLING ☐NAIL CHANGES ☐DRY EYES/MOUTH	☐DISCOLORATION ☐SWEATING CHANGES	
ARE YOU HAVING HEADACHES/ HEAD PAIN, BLACKOUTS, COORDINATION PROBLEMS OR MEMORY PROBLEMS?	☐YES	☐NO		NEUROLOGIC
IF YES, PLEASE CHECK...	☐HEADACHE ☐WEAKNESS ☐BLACKOUTS	☐FACE PAIN ☐TREMORS ☐TROUBLE WITH MEMORY	☐FACE NUMBNESS ☐CLUMSINESS ☐TROUBLE CONCENTRATING	
ARE YOU HAVING ANY PSYCHOLOGICAL ISSUES OR PROBLEMS WITH SLEEP?	☐YES	☐NO		PSYCHIATRIC
IF YES, PLEASE CHECK...	☐HALLUCINATIONS ☐SUICIDAL THOUGHTS	☐FEELING DEPRESSED ☐INAPPROPRIATE CRYING	☐TROUBLE SLEEPING ☐INAPPROPRIATE LAUGHING	
ARE YOU BLEEDING OR HAVE FOUND ANY LUMPS/SWELLING THAT ARE NEW?	☐YES ☐ABNORMAL BLEEDING	☐NO ☐NOSE BLEEDS	☐LUMPS OR SWELLINGS	HEMATOLOGIC/ LYMPHATIC
DO YOU HAVE ANY OF THE OTHER FOLLOWING SYMPTOMS?	☐EXCESSIVE THIRST	☐HEAT/COLD INTOLERANCE		ENDOCRINE

FIG.5

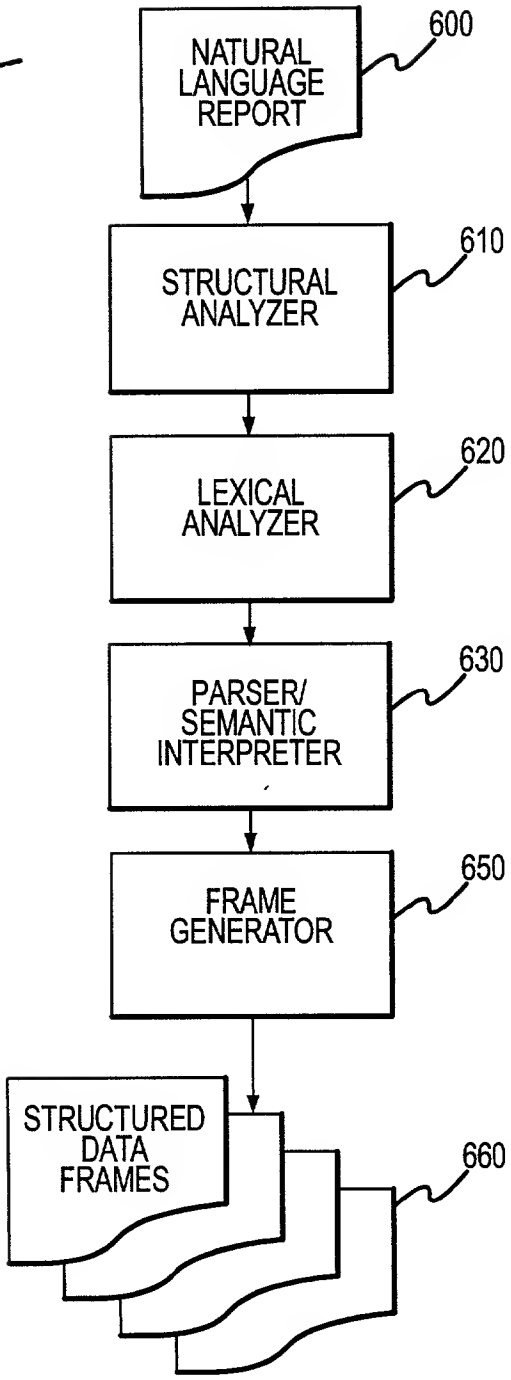

FIG.6

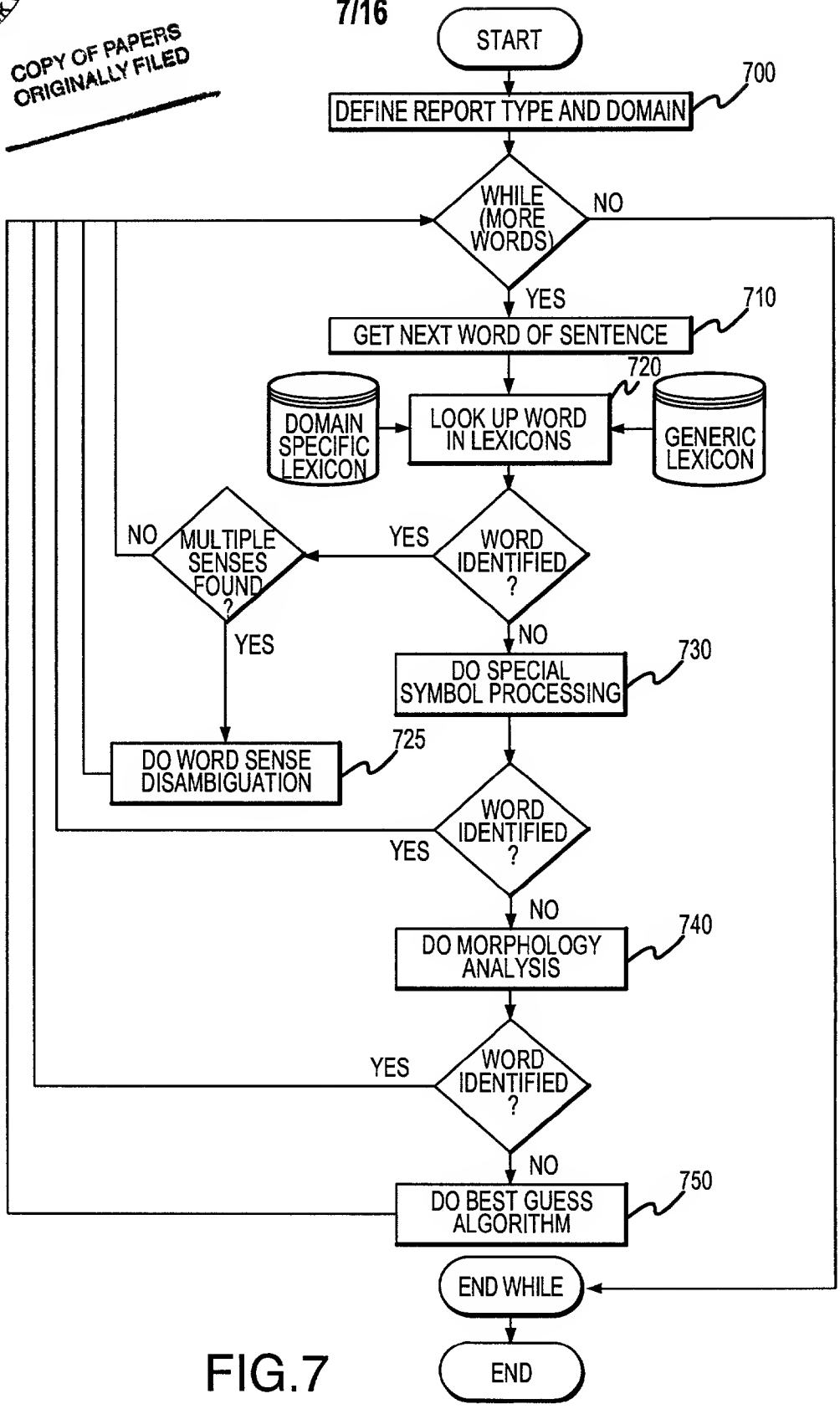

FIG.7

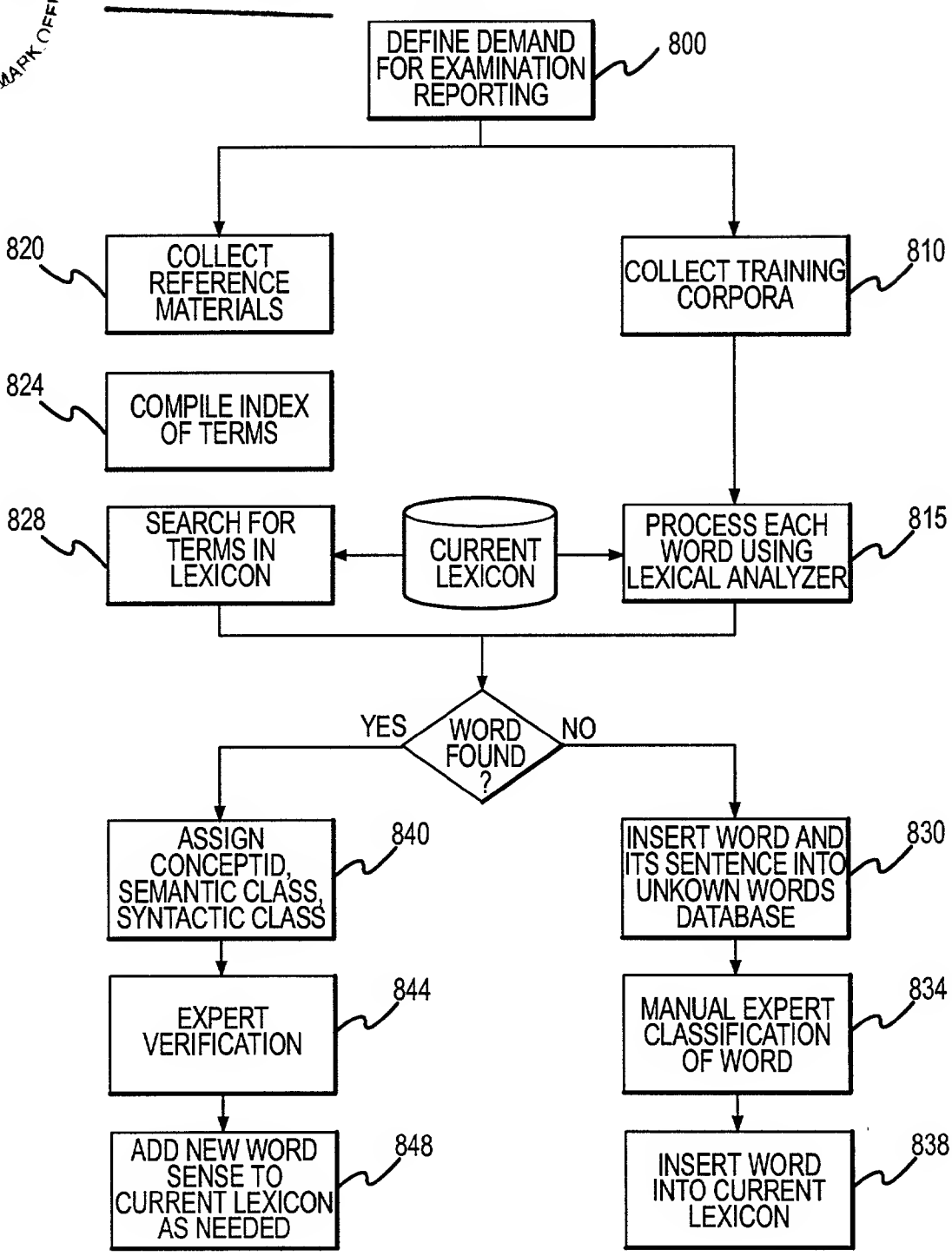

FIG.8

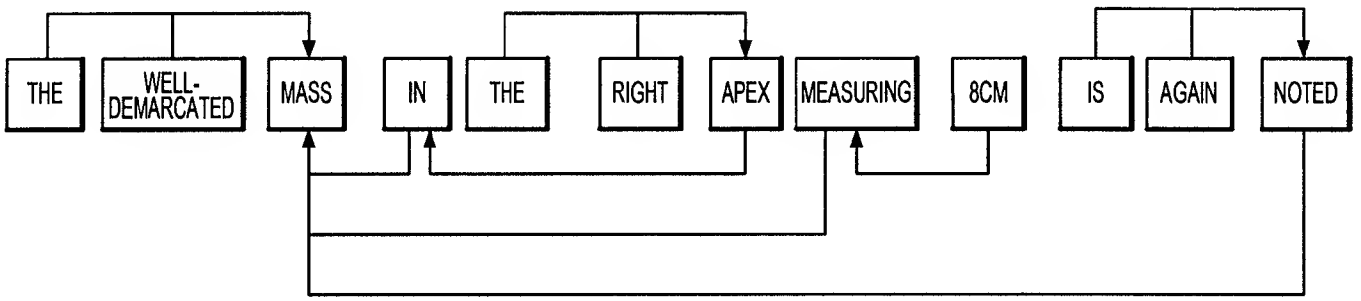

FIG.9A

predicate	head	relation	value
hasArticle	mass	EQUALS	the
hasBorderDef	mass	EQUALS	well-demarcated
hasLocation	mass	in	apex
hasDirection	apex	EQUALS	right
hasSize	mass	measuring	8cm
hasTempMod	noted	EQUALS	again
hasAuxillary	noted	EQUALS	is
hasExistence	mass	EQUALS	noted

FIG.9B

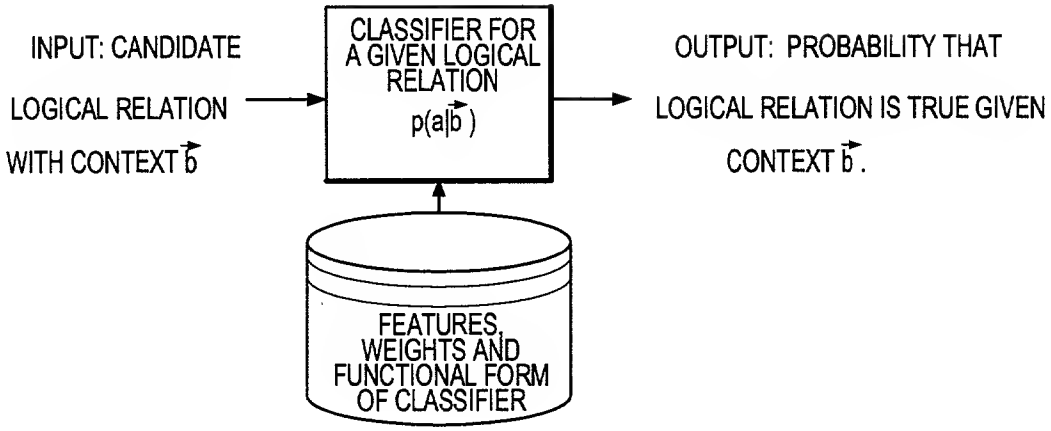

FIG.10A

MAXIMUM ENTROPY MODEL USED FOR PARSER/SEMANTIC INTERPRETER

$$p(a|\vec{b}) = \frac{1}{Z(\vec{b})} \cdot \exp\left\{\sum_{1}^{n} \lambda_i f_i(a,\vec{b})\right\}$$

λ_i = WEIGHTING FACTOR FOR FEATURE i (COMPUTED FROM TRAINING EXAMPLE STATISTICS)

$Z(\vec{b})$ = NORMALIZATION FACTOR TO ASSURE THAT THE PROBABILITY IS WITHIN THE RANGE 0.0 TO 1.0

FIG.10B

(i) $$f(a,\vec{b}) = \begin{cases} 1 & \text{if}(a=1) \;\&\; (b_2=\text{TRUE} \;\&\; b_6=\text{TRUE} \;\&\; b_8=\text{FALSE}) \\ 0 & \text{OTHERWISE} \end{cases}$$

(ii) $$f(a,\vec{b}) = \begin{cases} 1 & \text{if}(a=0) \;\&\; (b_2=\text{FALSE} \;\&\; b_1=\text{TRUE} \;\&\; b_8=\text{TRUE}) \\ 0 & \text{OTHERWISE} \end{cases}$$

FIG.10C

	THE	OSSEUS	AND	SOFT TISSUE	STRUCTURES	OF	THORAX	DEMONSTRATE	CHANGE
THE	○			H	H		H		H
OSSEUS		○	R		H				H
AND			○	H					
SOFT TISSUE				○	H		H		H
STRUCTURES					○				
OF					H	○			
THORAX						R	○		
DEMONSTRATE				H	H		H	○	
CHANGE						R		R	○

FIG.11A

	THE	OSSEUS	AND	SOFT TISSUE	STRUCTURES	OF	THORAX	DEMONSTRATE	CHANGE
THE	○			0.42	0.89		0.13		0.05
OSSEUS		○	0.78		0.74				0.28
AND			○	0.78			0.31		
SOFT TISSUE				○	0.91		0.42		0.31
STRUCTURES					○				
OF					0.95	○			
THORAX						0.95	○		
DEMONSTRATE				0.68	0.78		0.65	○	
CHANGE						0.29		0.92	○

FIG.11B

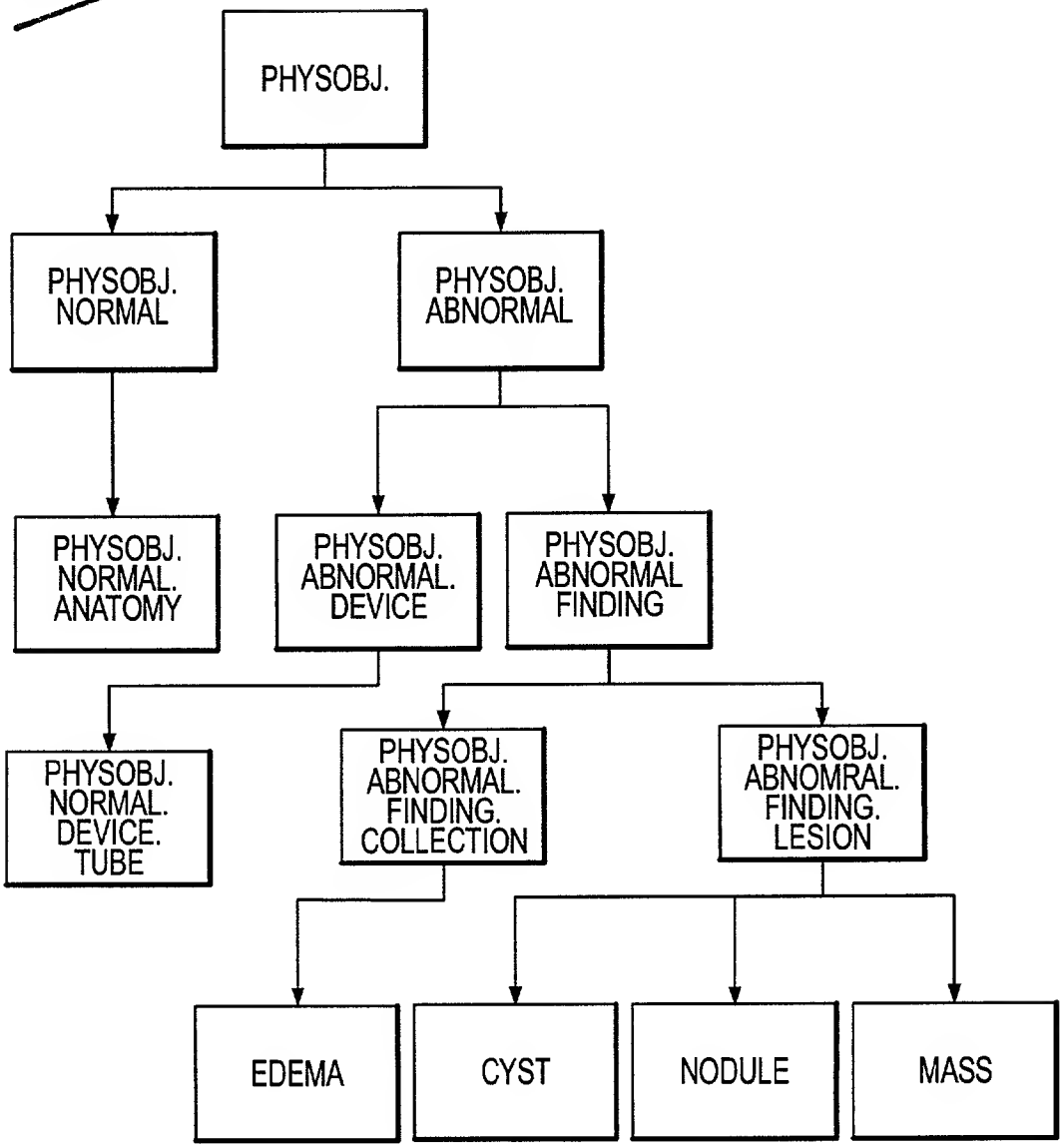

FIG.12

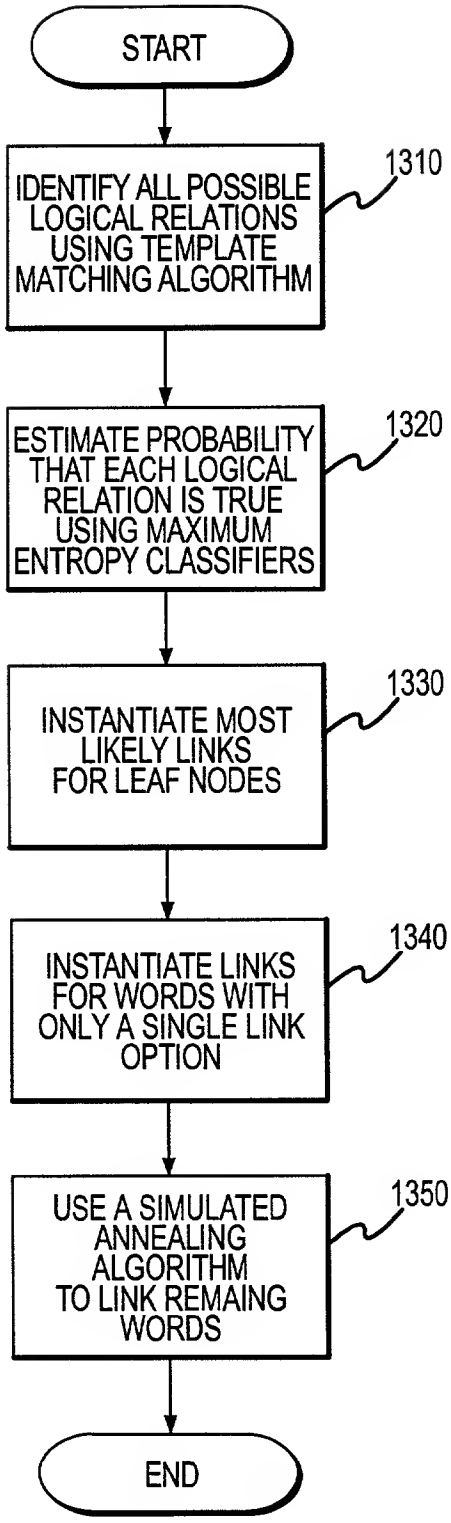

FIG.13

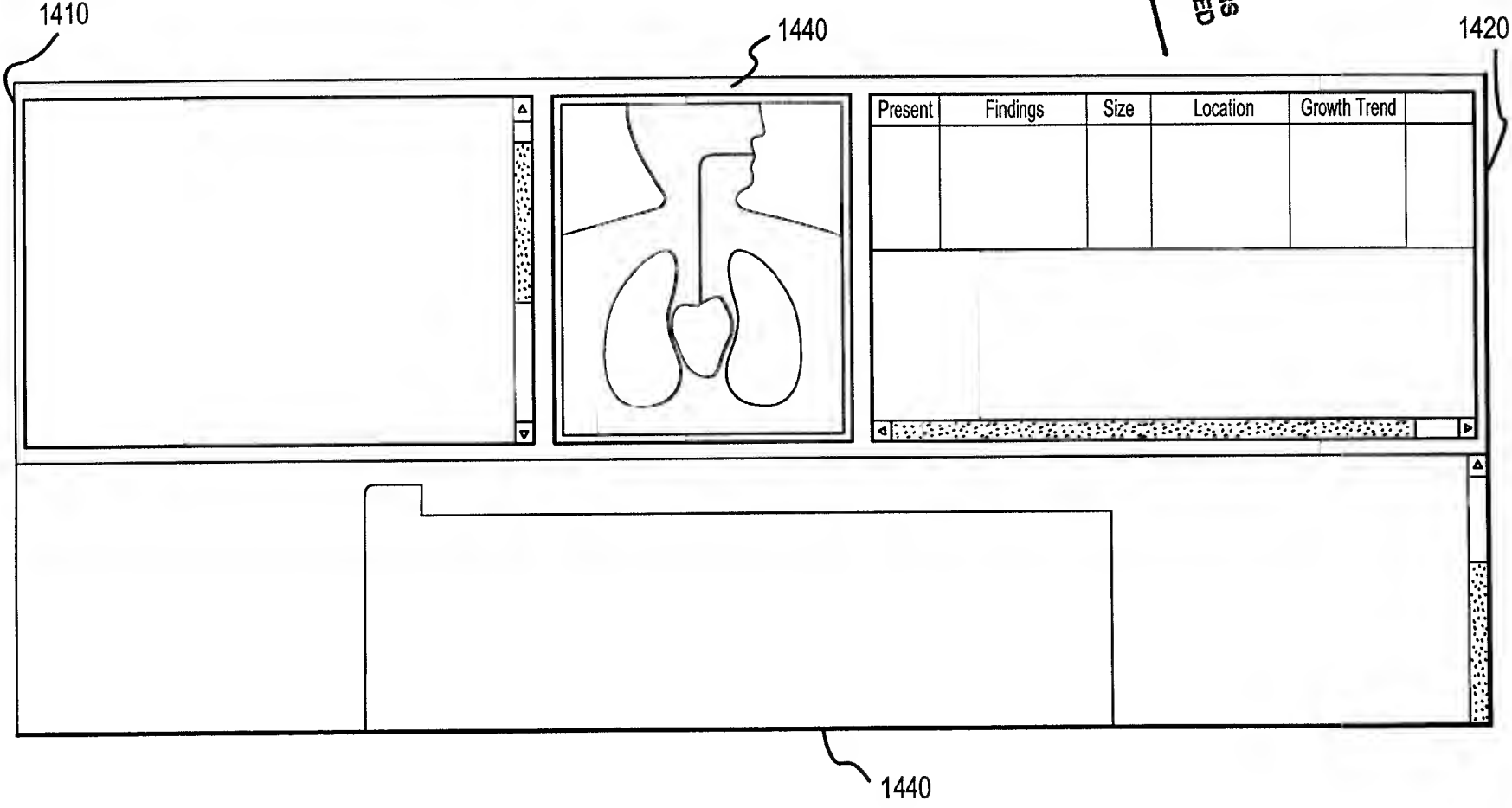

FIG.14

NLP Finding

Entity ID: 'mass'

Entity Class: FINDING Abnormal.lesion

Existence

Currently

Attribute	Value
How Determined	by observation
Certainty of Existence	certain
Relevancy of Note	significant

Change (t2-Currently, t1=previous exam)

Attribute	Value
Direction of Change	stable, still exists
Magnitude of Change	no change in existence

Location

Spatial-Relation	Anatomy Description	Standardized Anatomy Description
'in'	right apex	apex of right upper lobe of lung

State

Current

Size

Dimension	Relation	Value	Units	Precision
Diameter	=	8	cm	Approximately

external architecture

Dimension	Relation	Value	Units	Precision
border definition	=	well demarcated	n/a	n/a

FIG.15